

24-09-2004

EP0350909

10/537425

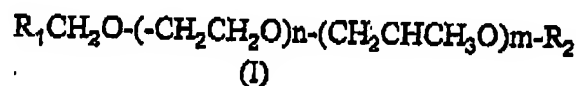
21

JC17 Rec'd PCT/PTO 02 JUN 2005

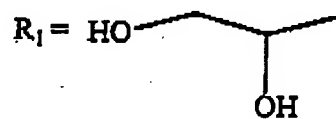
CLAIMS

1. Aqueous dispersions of non-ionic $-N=C=O$ blocked polyisocyanates obtained from the reaction of:

- (i) a polyisocyanate;
- (ii) a thermally de-blockable $-N=C=O$ blocking agent;
- (iii) a non-ionic alkoxyated diol having general formula I:

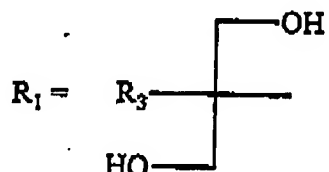


wherein:



(II)

or



(III)

R_2 and R_3 are equal or different and are chosen among methyl, ethyl, n-propyl, l-propyl, n-butyl, l-butyl;

n is a number from 0 to 40;

m is a number from 0 to 40;

$n + m$ is a number from 20 to 80.

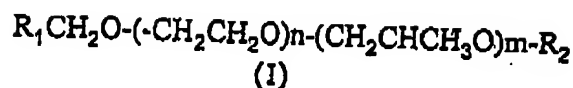
2. Aqueous dispersions of non-ionic $-N=C=O$ blocked polyisocyanates according to claim 1., wherein $n + m$ is a number from 20 to 40.

3. Aqueous dispersions of non-ionic $-N=C=O$ blocked polyisocyanates according to claim 1. or 2., wherein the non-ionic alkoxyated diol (iii) has the general formula I:

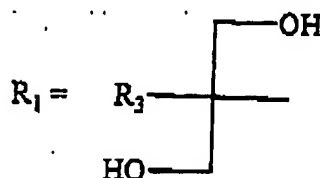
24-09-2004

EP0350969

22

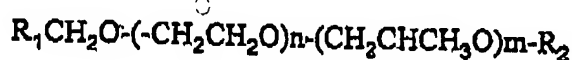


wherein:



(III)

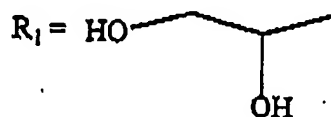
- 5 R_2 is methyl, R_3 is ethyl, n is a number from 15 to 30 and m is a number from 0 to 10.
4. Aqueous dispersions of non-ionic $-N=C=O$ blocked polyisocyanates according to any of the preceding claims, wherein the polyisocyanate (i) is the isocyanurate obtained from 1,6-hexamethylenediisocyanate and the reaction product of trimethylol propane and toluenediisocyanate (its isomers 2,4 and 2,6 being in a weight ratio of 80:20).
- 10 5. Aqueous dispersions of non-ionic $-N=C=O$ blocked polyisocyanates according to any of the preceding claims, wherein the blocking agent (ii) is 3,5-dimethylpyrazole.
- 15 6. Process for the preparation of aqueous dispersions of non-ionic $-N=C=O$ blocked polyisocyanates comprising the following steps:
- a. a polyisocyanate (i) and a non-ionic alkoxyated diol (iii) of the general



formula

(I)

wherein



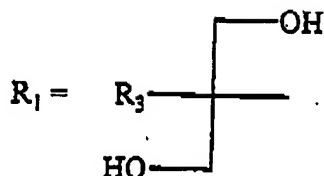
(II)

24-09-2004

EP0350909

23

or



5

(III)

R_2 and R_3 are equal or different and are chosen among methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl;

10 n is a number from 0 to 40;

m is a number from 0 to 40;

$n + m$ is a number from 20 to 80,

are reacted at a temperature of 30°-120°C, their equivalent ratio being such that the percentage of free isocyanate groups in the resulting oligomer is from 3 to 10 and the percentage in weight of ethoxyl groups is from 10 to 40%;

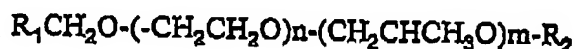
15

b. the thus obtained oligomer is reacted with an amount of a blocking agent (ii) such that the equivalent ratio of the isocyanate groups of the oligomer and the blocking agent (ii) is from 1:0.98 to 1:1.30;

20 c. the thus obtained mixture is dispersed into water under vigorous stirring to obtain a dispersion having a solid content of from 20 to 40% by weight.

7. Process for the preparation of aqueous dispersions of non-ionic -N=C=O blocked polyisocyanates according to claim 6., wherein the non-ionic alkoxyated diols (iii) have the general formula I:

25



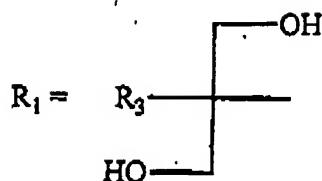
(I)

wherein:

24-09-2004

EP 0350909

24



(III)

R_2 is methyl, R_3 is ethyl, n is a number from 15 to 30 and m is a number from 0 to 10.

- 5 8. Process for the preparation of aqueous dispersions of non-ionic -N=C=O blocked polyisocyanates according to claim 6., or 7., wherein the polyisocyanate (i) is the isocyanurate obtained from 1,6-hexamethylenediisocyanate and the reaction product of trimethylol propane and toluenediisocyanate (its isomers 2,4 and 2,6 being in a weight ratio of 80:20).
- 10 9. Process for the preparation of aqueous dispersions of non-ionic -N=C=O blocked polyisocyanates according to claim 6., 7., or 8., wherein the step b. is preceded by dilution of the reaction mixture obtained in a. with from 0.10 to 0.50 parts by weight of a water mixable polar solvent.
- 15 10. Process for the preparation of aqueous dispersions of non-ionic -N=C=O blocked polyisocyanates according to claim 9., wherein the water mixable polar solvent is chosen among methyl ethyl ketone, acetone, cyclohexanone.
- 20 11. Process for the preparation of aqueous dispersions of non-ionic -N=C=O blocked polyisocyanates according to any of the claims from 6. to 10., wherein in step a. the equivalent ratio of polyisocyanate (i) and alkoxyated diol (iii) is such that the percentage in weight of ethoxyl groups is from 20 to 30%.
- 25 12. Process for the preparation of aqueous dispersions of non-ionic -N=C=O blocked polyisocyanates according to any of the claims from 6. to 11., wherein the blocking agent (ii) is chosen from butanone oxime and 3,5-dimethylpyrazole.

24-09-2004

EP0350909

25

13.Process for the preparation of aqueous dispersions of non-ionic $-N=C=O$ blocked polyisocyanates according to any of the claims from 6. to 12., wherein the amount of blocking agent (ii) is such that the equivalent ratio of the isocyanate groups of the oligomer and the blocking agent (ii) is from 1:1 to 1:1.2.

14.Process for the preparation of aqueous dispersions of non-ionic $-N=C=O$ blocked polyisocyanates according to any of the claims from 6. to 13., wherein in step c. the mixture is dispersed into water under vigorous stirring to obtain a dispersion having a solid content of from 25 to 35% by weight.

15.Procedure for the oil- and/or water-repellent finishing of textiles, characterised by the fact that, as finishing agent, an aqueous composition is used, said aqueous composition comprising at least an organic perfluorinated polymeric compounds and from 0.1 to 10% by weight, on the total weight of the composition, of an aqueous dispersion of non-ionic $-N=C=O$ blocked polyisocyanates according to any of claims from 1. to 5., the weight ratio between the solid fraction of the aqueous dispersion and the perfluorinated polymeric organic compounds being comprised between 1:1 and 1:15.

16.Textile printing pastes characterised by the fact that they contain from 0.3 to 5% by weight of an aqueous dispersion according to any of claims from 1. to 5.

17.Textile printing pastes characterised by the fact that they contain from 1 to 3.5% by weight of an aqueous dispersion according to any of claims from 1. to 5.